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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,494	03/01/2002	Donald Charles Soltis JR.	10016692-1	2136

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EXAMINER

VITAL, PIERRE M

ART UNIT PAPER NUMBER

2188

DATE MAILED: 07/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/086,494

Applicant(s)

SOLTIS, DONALD CHARLES

Examiner

Pierre M. Vital

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 31-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to applicant's communication filed May 9, 2005 in response to PTO Office Action mailed February 7, 2005. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.

2. In response to the last Office Action, claims 34 and 44 have been amended. No claims have been canceled. No claims have been added. As a result, claims 31-50 remain pending in this application.

3. The objection to claims 34 and 44 has been withdrawn due to the amendment filed May 9, 2005.

### ***Response to Arguments***

4. Applicant's arguments filed May 9, 2005 have been fully considered but they are not persuasive.

Applicant asserts that "a distinction of independent claim 1 over the '141 patent is that each of the plurality of tables respectively identifies which of the plurality of cache units are available to the corresponding processor".

Examiner respectfully disagrees. Brenza discloses that the correct partition to access must be identified by the partition look-aside table (PLAT) when a request is sent to cache (see column 3, lines 47-50). Even though each partition 50 of L1 cache 34 is available to a CPLU as pointed by applicant, these partitions are not available to the CPLU at all times. A partition must be identified as containing the requested information before it is accessed by a CPLU (see column 7, lines 12-19). Thus, it can be clearly seen that Brenza discloses that "each of the plurality of tables respectively identifies which of the plurality of cache units are available to the corresponding processor" as claimed by applicant.

Applicant's remaining arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out supposed errors in the examiner's action and how the language of the claims patentably distinguishes them from the references.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 31-38 and 40-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Brenza (US 4,905,141).

As in claim 31, Brenza discloses a system comprising:

a plurality of processors (Fig. 2, elements 70, 72, 74, 76, 80, 82, 84, 86, 88, 90, 92, 94, 96 and 98; column 6, line 46 to column 7, line 2), where the plurality of processing elements comprising the CPU of Brenza are viewed as processors because they receive instructions, generate addresses, fetch and store data from memory, and operate on data (see also column 3, lines 19-34);

a plurality of cache units (column 3, lines 35-39 and 51-53; Fig. 2, element 50; column 6, lines 1-4; column 7, lines 46-50);

a crossbar interface between the plurality of processors and the plurality of cache units (column 3, lines 53-59; Fig. 2, elements 52 and 58; column 7, lines 50-55), where it is noted that the switches of Brenza as described are functionally equivalent to a crossbar switch;

a plurality of tables for the plurality of processors (Fig. 2, elements 100, 102, 104, 106 and 108; column 6, lines 64-67);

each table identifying

which of the plurality of cache units are available to the corresponding processor (column 3, lines 47-50; column 4, lines 1-9; column 7, lines 12-19; Figs. 9 and 10; column 13, lines 32-54); and

which of a plurality of memory partitions are available to the identified cache units (column 13, lines 55-64), where the zone identifier disclosed by Brenza inherently identifies a main memory partitioned according to ranges of addresses because Brenza explicitly states that the zone partitioning conforms to that taught by Bean et al in US Pat. No. 4,843,541, which shows a main memory partitioned into a plurality of address ranges (See Fig. 1 of Bean).

As in claim 32, partitions representing non-overlapping main memory address ranges are inherent in Brenza by the same reasoning given in the rejection of claim 31 (See Fig. 1 of Bean).

Claim 33 is rejected using the same rationale as for the rejection of claim 31, noting that there is no requirement or expectation that the PLATS as taught by Brenza would be symmetrical, and in fact it would be expected that the data contained therein would differ from table to table.

Claims 34-38 are rejected using the same rationale as for the rejection of claim 33 according to the following reasoning: Brenza teaches PLATS mapping between a zone partition (i.e. memory partition corresponding to an address range), a cache partition and a memory address for each processor (Figs. 9 and 104 column 13, lines 32-64). The system of Brenza is completely flexible in that any processor can access any cache partition and any address associated with any zone identifier (column 7, lines 50-55; column 8, lines 7-124 column 13, lines 55-64). Therefore, it is understood in Brenza that different tables will simultaneously describe mappings to both of the same and different cache and memory partitions as recited in claims 34-36. Furthermore, there is no requirement or expectation in Brenza that all of the cache partitions and all of the memory partitions be mapped to a particular processor as recited in claims 37-38. In fact, Brenza teaches a miss in the PLAT which means that no cache partition or memory partition is mapped to the processor (column 8, lines 13-21).

Claim 40 is rejected using the same rationale as for the rejection of claim 31, noting that Brenza teaches a dynamic system where the PLATS are updated (Column 8, lines 7-21).

Claims 41-48 are rejected using the same rationale as for the rejection of claims 31-38 as above.

Claim 49 is rejected using the same rationale as for the rejection of claim 40 above.

Claim 50 is rejected using the same rationale as for the rejection of claim 31.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenza (US 4,905,141) in view of Olukotun (Kunle Olukotun et al, "The Case for a Single-chip Multiprocessor" Proceedings of the Seventh International Conference on Architectural Support for Programming Languages and Operating Systems, Cambridge, MA, Oct. 1996).

Brenza is relied upon for the teachings relative to claim 31 as above.

Brenza does not teach that the plurality of processors, plurality of cache units, crossbar and plurality of tables are configured on a single die as required by claim 39.

Olukotun teaches a single-chip multiprocessor comprising a crossbar-connected shared L2 cache located on the same die as the processors (Fig. 3; § 4.2). Olukotun teaches that increasing integration density allows for higher clock rates, allowing microprocessor performance growth (§ 1, paragraph 1).

Regarding claim 39, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to integrate the elements taught by Brenza on the same die as taught by Olukotun, in order to allow for higher clock rates and performance growth as taught by Olukotun.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The examiner also requests, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line no(s) in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

11. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

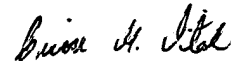
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (571) 272-4215. The examiner can normally be reached on 8:30 am - 6:00 pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 13, 2005



Pierre M. Vital  
Primary Examiner  
Art Unit 2188